

What is claimed is:

1. A particle size distribution analyzer for analyzing a particle size distribution of a group of particles contained in a sample based on a fluctuation of scattering light caused by irradiating the sample with fundamental light, the particle size distribution analyzer comprising:

a reference cell for containing a reference sample used as a reference;

a test cell for containing a test sample composed of the reference sample and a group of test particles added thereto;

a fundamental light guide mechanism operative to divide fundamental light irradiated from a single light source and then guide divided fundamental lights to the reference sample and the test sample, respectively;

a scattering light guide mechanism operative to guide scattering lights caused by irradiation of the samples with the respective divided fundamental lights to a light intensity detecting section configured to detect the intensity of light; and

an information processing section for calculating a particle size distribution of the group of test particles contained in the test sample based either on a difference between fluctuations of the intensities of the respective scattering lights detected by the light intensity detecting section or on a difference between information items computed

from the respective fluctuations.

2. The particle size distribution analyzer according to claim 1, wherein the reference sample is composed only of a predetermined solvent, while the test sample contains the test particles dispersed in the predetermined solvent.

3. The particle size distribution analyzer according to claim 1, wherein the fundamental light guide mechanism is composed of constituent elements including optical components, all the constituent elements being fixed, a light dividing element of the constituent elements being operative to divide the fundamental light spatially.

4. The particle size distribution analyzer according to claim 3, wherein the light dividing element is a half mirror disposed on the optical path of the fundamental light.

5. The particle size distribution analyzer according to claim 3, wherein the light dividing element is a pair of knife-edge mirrors disposed on the optical path of the fundamental light.

6. The particle size distribution analyzer according to claim 1, wherein the fundamental light guide mechanism is composed of constituent elements including optical components,

some of the constituent elements being movable, for guiding the fundamental light to either of the samples selectively by moving the movable elements.

7. The particle size distribution analyzer according to claim 1, wherein the cells are formed integral with each other.

8. A particle size distribution analyzer for analyzing a particle size distribution of a group of particles contained in a sample based on a fluctuation of scattering light caused by irradiating the sample with fundamental light, the particle size distribution analyzer comprising:

a reference cell for containing a reference sample;

a test cell for containing a test sample containing a group of test particles dispersed in the predetermined solvent;

a fundamental light guide mechanism operative to guide fundamental light irradiated from a single light source to the reference sample and then further guide the fundamental light having passed through the reference sample to the test sample;

a scattering light guide mechanism operative to guide scattering lights from the respective samples to a light intensity detecting section configured to detect the intensity of light; and

an information processing section for calculating a particle size distribution of the group of test particles contained in the test sample based either on a difference between fluctuations of the intensities of the respective scattering lights detected by the light intensity detecting section or on a difference between information items computed from the respective fluctuations.

9. A particle size distribution analyzer for analyzing a particle size distribution of a group of particles contained in a sample based on a fluctuation of scattering light caused by irradiating the sample with fundamental light, the particle size distribution analyzer comprising:

a reference cell for containing a reference sample used as a reference;

a test cell for containing a test sample composed of the reference sample and a group of test particles added thereto;

a fundamental light guide mechanism operative to guide one of fundamental lights irradiated from a pair of light sources to the reference sample and the other to the test sample;

a scattering light guide mechanism operative to guide scattering lights from the respective samples to a light intensity detecting section configured to detect the intensity of light; and

an information processing section for calculating a particle size distribution of the group of test particles contained in the test sample based either on a difference between fluctuations of the intensities of the respective scattering lights detected by the light intensity detecting section or on a difference between information items computed from the respective fluctuations.

10. The particle size distribution analyzer according to claim 1, wherein a pair of light intensity detecting sections are provided and the scattering light guide mechanism is operative to guide scattering lights from the respective samples to the respective light intensity detecting sections.

11. The particle size distribution analyzer according to claim 8, wherein a pair of light intensity detecting sections are provided and the scattering light guide mechanism is operative to guide scattering lights from the respective samples to the respective light intensity detecting sections.

12. The particle size distribution analyzer according to claim 9, wherein a pair of light intensity detecting sections are provided and the scattering light guide mechanism is operative to guide scattering lights from the

respective samples to the respective light intensity detecting sections.

13. The particle size distribution analyzer according to claim 1, wherein a single light intensity detecting section is provided and the scattering light guide mechanism is operative to switch from one of scattering lights from the respective samples to the other for selectively guiding either of the scattering lights to the light intensity detecting section.

14. The particle size distribution analyzer according to claim 8, wherein a single light intensity detecting section is provided and the scattering light guide mechanism is operative to switch from one of scattering lights from the respective samples to the other for selectively guiding either of the scattering lights to the light intensity detecting section.

15. The particle size distribution analyzer according to claim 9, wherein a single light intensity detecting section is provided and the scattering light guide mechanism is operative to switch from one of scattering lights from the respective samples to the other for selectively guiding either of the scattering lights to the light intensity detecting section.

16. A particle size distribution analyzer for analyzing a particle size distribution of a group of particles contained in a sample based on a fluctuation of scattering light caused by irradiating the sample with fundamental light, the particle size distribution analyzer comprising:

a reference cell for containing a reference sample used as a reference;

a test cell for containing a test sample composed of the reference sample and a group of test particles added thereto;

a fundamental light guide mechanism operative to guide fundamental light irradiated from a light source to a predetermined irradiation region;

a cell moving mechanism operative to selectively move the reference cell or the test cell to the irradiation region;

a scattering light guide mechanism operative to guide scattering light from one of the samples which is positioned in the irradiation region to a light intensity detecting section configured to detect the intensity of light; and

an information processing section for calculating a particle size distribution of the group of test particles contained in the test sample based on a difference between information items related to the intensities of respective scattering lights detected by the light intensity detecting

section.

17. The particle size distribution analyzer according to claim 16, wherein the information items related to the intensities of respective scattering lights are information items on angle distributions of the intensities of the respective scattering lights.